# THE CHEMIST

NOVEMBER 1951 VOLUME XXVIII No. 11

**DR. ROMEO P. ALLARD**
*Chairman, Los Angeles Chapter*
(See Page 455)

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## IN THIS ISSUE

*Editorial:*

**Professional Improvement. Dr. Lloyd Van Doren, F.A.I.C. 459**

**Some Reminiscences. Dr. Herman I. Schlesinger 463**

**A Colleague and a Friend. Dr. W. C. Johnson 473**

**Borohydrides—A Case History of Academic Exploratory Research, Prof. H. C. Brown 479**

**Necrology 483**

**Council 487**

**AIC Activities 490**

**For Your Library 493**

**Diamonds (Quotations from ACS Diamond Jubilee) 496**

**Information 497**

**Condensates 499**

**Professional Services 491 & 500**

## Cover Picture

Dr. Romeo P. Allard, chairman of the Los Angeles AIC Chapter, is professor of chemistry and chairman of the department of chemistry at Loyola University, Los Angeles, Calif. He was granted the B.S. (in chemical engineering) degree in 1931; the M.S. degree in 1932, and the Ph.D. degree in 1934, all from the University of Notre Dame. He joined the faculty of Loyola University in 1935, and two years later he was appointed chairman of the newly-formed department of chemistry. He served as dean of the College of Science in 1946 and 1947. In that year, the College of Science was incorporated into the combined Arts and Sciences, where he served as assistant dean until 1949. He is a member of the American Chemical Society.

Rated as "a splendid gentleman and a good scholar, as well as a fine teacher," Dr. Allard emphasizes the importance of professional consciousness among chemists. The Los Angeles Chapter, under his leadership, is concerned with a program to stir up interest (professionally) among the students graduating from college, and to inculcate in the minds of the members of the AIC the spirit of professionalism as contained in the INSTITUTE'S Code of Ethics.

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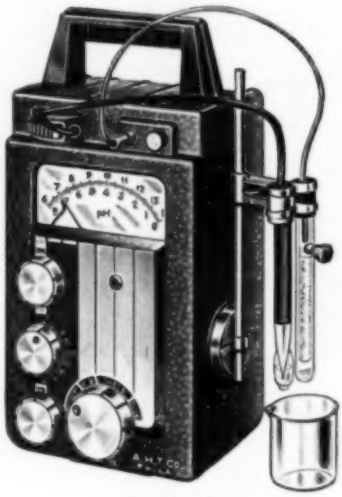

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## EDITORIAL

# Professional Improvement

**Dr. Lloyd Van Doren, F.A.I.C.**

*Secretary, The American Institute of Chemists*

THE public's recognition of the importance of chemistry has improved tremendously since 1923, the year the AIC was founded, but how has the position of the chemist as an individual improved since then?

Charter members of the INSTITUTE were queried before the Korean War. Their replies show the trends of normal times rather than those of emergency situations which develop during periods of defense preparation. The question presented was, "In your opinion, is the professional situation today better than it was in 1923?" Several of these answers are quoted below. Others will be discussed in later issues of THE CHEMIST.

"Yes, considerably better but there is still room for improvement."
—Dr. M. L. Crossley

"I think one can definitely state that the professional situation of chemists is much better today than in 1923. This is particularly true in industry outside of the specific or straight chemical operation. Twenty-five years ago, outside of specific chemical manufacture, industry scarcely considered a chemist as anything more than a tester, whereas today practically every industry realizes the need of both applied and theoretical chemistry. As a result, the chemist, and chemical engineer, are being recognized and are finding a place in executive, administrative, and sales capacities, as well as in the factory and laboratory."
—Lloyd L. Davis

"Very much better."—Ralph B. Deemer.

"Decidedly better, in general, as to recognition and financially.—Benjamin Janer.

"Yes. Vastly better."—Dr. Ralph E. Lee.

"I would say it is considerably better. The chemists' professional standing has improved."—Dr. Norris W. Matthews.

"Very markedly better from the standpoints especially of professional recognition and material return."—Dr. Martin Meyer.

"Although I am pretty far away from the center of chemical activity, from what I can gather in general, I should say 'Magnificently Yes.' "—Dr. Jack P. Montgomery.

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"Yes, much better." — Professor Alfred M. Peter.

"By far, on account of the enormous advance of chemistry in industry." —Nathan Smith.

"I believe it has improved distinctly."—John M. Weiss.

"Far better."—Roy Wisdom.

"Some ways better. Some ways not so good."—William J. Cotton.

"Yes, to a limited extent but in other respects, no—due to economic changes, taxes, laws, and the increase of monopolies, all of which are not beneficial to the individual members of the profession." — Leland A. Dubbs.

"Yes, this is due in part to publicity given the great advance in chemistry since 1923 so easily recognized by laymen today. Industrial managements today have the highest regard for their laboratories."—Richard B. Sheridan.

"Yes, a little better; but still far from satisfactory." — Charles F. Smith, Jr.

"I think there is no doubt about its being better—but it could be still better."—Raymond Szymanowitz

"In general, yes. Heavy demand for high grade chemists in research and management has brought higher prestige to the chemical profession." —George T. Tobiasson

"In some ways, but worse today for chemists over forty years of age." —Simon Mendelsohn.

"I think it is improving, due in large part to THE AMERICAN INSTITUTE OF CHEMISTS."—Dr. M. Starr Nichols.

We are encouraged to see that one of the INSTITUTE'S objectives is being attained—that of improving the professional situation of chemists; but this also means that we must increase our efforts and not relax vigilance in these abnormal times. The improvement of the profession can be accelerated by the active cooperation of every AIC member and by the addition of qualified non-members to our INSTITUTE.

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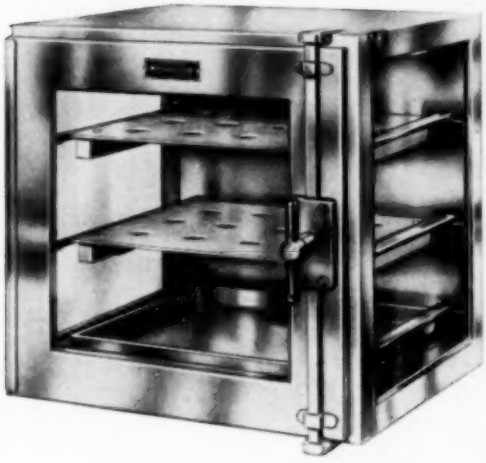

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# Some Reminiscences

**Dr. Herman I. Schlesinger**

*Professor Emeritus, University of Chicago*

(Acceptance address upon receiving the Honor Scroll of the Chicago AIC Chapter.)

Throughout my life. I have been a very fortunate man. I had the most generous of parents who made it possible for me, not only to pursue my undergraduate and graduate studies without financial worry, but also to have had nearly two full years of post-doctoral work in Europe. I encountered extraordinarily able and inspiring teachers during the formative years of my intellectual development.

My formal education began in a private grammar school, presided over by a man whose training as a German disciplinarian was mellowed by his experience in an American community. What I learned there about thoroughness of preparation and methods of study made all of my subsequent schooling easier. In the Lake View High School of this city, I had as my teacher of physics and chemistry Mr. Linebarger, whose influence on my future I gratefully acknowledge. He was a most unusual person for his times. In those days research was seldom practiced in America in even the larger universities, yet in a small office and preparation room behind the student laboratory, he had constructed a complicated all-glass distilling column and a device for studying the vapor tensions of mixtures of volatile liquids. From him I not merely obtained an excellent grounding in physics and chemistry, but also got my first inkling of the fascination of scientific research. And when I entered the University of Chicago, I immediately encountered such outstanding teachers and scientists as Stieglitz, Alexander Smith, J. U. Nef, and Millikan.

Equally fortunate was I in the students who chose to work with me for their masters' and doctorate degrees. I am convinced that no one in our department had an abler group. Every one of them, and there must be about fifty, made original contributions to our joint research, and the greatest satisfaction of my professional life has been the success which they have had after they left the university. I cannot single any of them out except for those who, after receiving their doctorates, continued to work with me, first as research assistants and then as associates and colleagues. Anton Burg, Herbert Brown, Al Finholt, Tom Wartik, and the two Schaeffer's should share with me this Honor Scroll.

**The University of Chicago**

Fifty-one years ago I entered the University of Chicago as a freshman determined to major in chemistry: That department was still so small that it did not need all of the space provided by its relatively new Kent Laboratory. Kent Theatre, for example, was reserved for the department of public speaking and was frequently used for football rallies which most of the graduate chemistry students enthusiastically attended. Only two of the four lecture rooms were used by the department, and the large laboratory on the top floor, now employed for undergraduate qualitative analysis, capable of housing about seventy-five students, was empty except for me. I had been banished by my fellow students from what was then the only research laboratory, because I was working with an organic sulfur compound supposed to have an obnoxious odor. One morning I arrived at work rather weary after a dance of the evening before. Since my experiment at that moment did not require close attention, I rolled up a fire blanket for a pillow, and stretched out on one of the laboratory benches for much-needed sleep. The next thing I knew, Prof. Stieglitz was standing by my side. Startled, I demanded how he knew that I was working in that remote spot. His answer, given in his characteristic deliberate fashion, was "I had only to follow the smell."

Another indication of the small size of the department is the fact that during my five years as a student at Chicago, only fourteen doctorate degrees were awarded in chemistry; in the single year 1950-51 about thirty were granted. In the fall of 1900, the faculty consisted of only four regular staff members and two post-Ph.D. assistants. In 1901, H. N. McCoy came in as an instructor to give the first formal course in physical chemistry to have been offered by the department. Today there are twenty-seven, not counting associates and emeriti. The senior members of the department, Nef, Smith, and Stieglitz represented an interesting contrast.

Smith was an ideal teacher of freshman. His lectures were clear. He delivered them dramatically, and interlaced them with an amount of humor that delighted the beginners. He was friendly and sociable; the students called him the dancing dean. While at Chicago he carried out his fundmental research on the modifications of sulfur, but I gained the impression that he was more interested in teaching and in administrative work than in research.

In contrast to Smith, Julius Stieglitz spoke very deliberately and seldom indulged in humor, though he was by no means devoid of that quality. In his lectures he held the attention of his students by the perfect organization of his material, and by his critical analysis of his subject

matter, rather than by striking dramatic quality. He was as successful with undergraduates as with graduate students, and he was much sought after as a research director by students desiring to work in his field of physico organic chemistry.

Nef, in turn, was quite different in temperament from either Smith or Stieglitz, He was an intensely nervous person, overflowing with energy. His walk was more like a sprint than a walk; his vacations were spent climbing mountains whenever possible. He lectured rapidly, most of the time writing on the black board with his back toward the class and with an eraser in the left hand, with which he almost immediately erased what he had just written with his right hand. You can readily understand that his lectures were difficult to follow, but they were nevertheless extremely stimulating because they represented a highly original point of view, and were never confined to what could be found in textbooks. In the laboratory, however, he, like Stieglitz, was a magnificent teacher, insistent on careful techniques and on a thorough understanding of the significance of the experiments underway.

Different as these three men were, they had one trait in common; each of them, in the subjects he taught, stressed interpretation of the facts presented, and the fundamental principles which are necessary to convert phenomena and data into organized science. Alexander Smith, in the textbook which after nearly fifty years is still in use, was the first to introduce elements of physical chemistry into general chemistry; one of Stieglitz' outstanding contributions was his textbook on qualitative analysis which was the first to base this subject on the theory of ionization and the law of chemical equilibrium in a practical way; Nef based his discussion of organic chemistry on what he called bivalent carbon, but that was essentially a forerunner of modern concepts of free radical chemistry.

Those who are familiar with my way of teaching can readily discern how the training I received under these men has influenced me. I, too, have stressed the importance of basing the presentation of subject matter on fundamental principles. But from these men I also learned the importance of basic facts. I fear that in recent years some teachers have neglected the factual aspects of science on the ground that facts are easily forgotten whereas principles are remembered. I am convinced that the principles and philosophy of science, distilled away from its phenomena and its techniques, are, like the brandy distilled away from the wine, a heady potion likely to produce a false glow of accomplishment rather than the strength resulting from solid intellectual nourishment.

Because of the small size of the department there existed a fairly

unique relationship among the graduate students and between the students and faculty. All of the candidates for the doctorate degrees had benches in the same fairly large research laboratory. As a result each knew on what problem each of the others was engaged. When Nef came into the room to give advice and to discuss their problems with his students, all of us were likely either to hear what was going on, or to find out about it as soon as Nef left the room. The same thing was true of the discussions Stieglitz and McCoy had with their students. Obviously this was a broadening type of experience. The relationship between students and faculty was also a very friendly one. Every month or so a team of students met a faculty team for bowling, and there were other social contacts between the two groups.

### Nernst's Laboratory

I encountered a very different situation when, shortly after receiving my doctorate degree, I became a student in Nernst's laboratory in Berlin. Only a few months before my arrival, Nernst had moved to Berlin from Goettingen, and his quarters were in an old, as yet poorly equipped, small building. The first floor was occupied by the professor of industrial chemistry; the third floor by Prof. Markwald who was working on problems of radioactivity. That floor also housed the laboratory room in which Landolt had carried out his classical experiments to prove the law of conservation of mass as applied to chemical reactions. The apparatus with which he carried out weighings and all other manipulations at a distance was still in place. Landolt, although quite an old man and rather feeble, nevertheless came to the Laboratory frequently to make a few additional tests. The second floor was reserved for physical chemistry. It contained a small office for the electrochemist, Prof. Jahn, and a room devoted to laboratory instruction in elementary physical chemistry. For Nernst's research and that of his students there were only four rather small rooms, of which one was his private laboratory. But there were not more than ten or twelve students; all except one already had their Ph. D. degrees. That one undergraduate, Von Eucken, was to become the most noted of the whole group. Others whose names might be familiar to some of you were Nernst's research assistant, Von Wartenberg, Jellinek, who later wrote a widely-used text on physical chemistry, but who then was Nerst's lecture assistant, and Weigert who later made a name for himself as a photochemist.

In spite of the small number of students, we did not see much of Nernst in the laboratory. Two or three time a week he dashed through it just before the lunch hour, often with his overcoat on and with his hat in his hand. It was surprising, how-

ever, how much one could benefit by these short contacts. He could instantly detect, it seemed to me as if it were almost intuitively, an incorrect connection in a complicated electrical circuit, or at moment's notice suggest an improvement in an experimental procedure which was giving inconsistent results. Equally rapidly did he find the flaws in an unsound interpretation of complex experimental data.

Nernst himself that year gave no lectures except in general chemistry, a course which duplicated several others given in other chemical institutes of the university, Many of the older students attended these lectures largely to observe the unique demonstrations Nernst devised. Aside from the laboratory course given by Walter Roth, the only course in physical chemistry was one in electrochemistry under Jahn. Unfortunately, the latter was extremely deaf, and he either spoke so softly that he could hardly be heard, or he shouted so loudly that the whole floor resounded with his voice, and very few of us could follow his presentations.

Although Nernst had most original ideas about the experimental solution of physico-chemical problems, and could tell others how to arrange their apparatus, he was himself a very awkward experimentalist. Most of the research done in his private laboratory was carried out by Von Wartenberg and Schlueter, Nernst's mechanician. Now and then, Nernst decided to do experiments with his own hands, an occasion anticipated with glee by the students, and with dread by the assistants. I remember one such incident. In the course of the experiment, Nernst accidentally shorted the electric wiring to a water pipe, which at the bend at the ceiling was made of lead. The lead melted, and a stream of water completely drenched Nernst, Von Wartenberg and Schlueter. But that is not the whole story. In the room above, Markwald was carrying out a distillation at reduced pressure. The break in the water line caused the pump to back up, completely ruining Markwald's preparation. Just as Nernst dashed out of his laboratory, wet as a poodle, Markwald dashed down the stairs afire with wrath. The ensuing verbal conflict between the wet and the hot could be described adequately only by an accomplished dramatist.

In other respects, however, Nernst was probably the most brilliant scientist I have ever met. I recall, in particular, a meeting of the Bunsen Gesellschaft at which Nernst presided. The meeting lasted two full days, and many papers in all branches of physical chemistry were presented. After each paper, without a single exception, Nernst was able to make a significant, penetrating comment, and by so doing was able to the initiate an illuminating discussion. The contrast between this meeting and

the present national meetings of our chemical societies, where discussion is seldom heard, was most striking.

Much as the students admired Nerst as a scientist, there was something about his personality which made him rather generally disliked. I think it may have been what seemed like a lack of sincerity. This trait may be illustrated by the treatment he accorded me. I became the teacher's pet, not because of any of my achievements, but merely because Nernst had been invited for the following year to give the Silliman lectures at Yale. He wanted someone on whom he could practice what little English he had acquired. Twice a week I was invited to have dinner with his family, so that he, the English governess and I could converse—a most painful experience. No matter how insignificant may have been a result I had obtained, he called the other students to my bench to express his admiration. At the large dinners he gave each semester to the students, the younger assistant professors, and a few full professors, I was served wine from a bottle reserved for those of highest rank and given cigars from a special box. The fact that everyone in the laboratory knew why I was singled out was, I presume, the only reason I was not thoroughly disliked. Because of these aspects of Nernst's personality, the atmosphere of his laboratory was quite different from the friendly, almost intimate one to which I had become accustomed at Chicago.

Berlin in those days was a most stimulating place. Its theatres were probably the best in the world. It was a center of music. Its art galleries, although not as outstanding as those of other large European cities, were a revelation to a young man who had seen very little of painting or sculpture. The chemist found a rich intellectual fare. Nernst had just announced the third law of thermodynamics, and almost all of his students were at work collecting data to give it a firmer experimental foundation. Planck had only recently developed the quantum theory, and devoted most of his lecture course to that topic. Emil Fischer was deep in his study of proteins and amino acids. Van't Hoff was disentangling the origins of the huge Stassfurt salt deposits.

### Van't Hoff's Course

The only one of these men, aside from Nernst, with whom I became personally acquainted was Van't Hoff. Alexander Smith, who knew him well, had given me a letter of introduction and Van't Hoff responded most kindly by having me at his house for dinner several times. He was a strikingly handsome man whose face expressed a remarkable inner serenity. He was deliberate in speech, but unusually approachable, cordial and unassuming. The atmosphere of the household was one of

charming simplicity.

The only course Van't Hoff gave, as an honorary professor in the University, started out with a detailed discussion of the solubilities and other phase relations needed for the elucidation of the Stassfurt deposits—a most dreary subject. I, and I suspect most of the others who had registered for the course, never learned if it contained anything else. On the first day the lecture hall was well filled; at the end of the lecture most of the audience rushed to the lecture table to have Van't Hoff sign their course book. Most of them did not return till the last lecture of the course when they again presented these books for a signature. I held out for a week or ten days. By that time only four or five others were left. It must have been very discouraging to the speaker to have to address an almost empty hall for so many days. Since the German system did not require course credits, and the awarding of degrees was based only on the final examination and the thesis, I do not know or do not remember the purpose of obtaining these signatures.

### Thiele's Laboratory

From Berlin I went to Strassburg for a semester of work under the organic chemist, Thiele. There again the atmosphere was very different from that either at Chicago or in Berlin. All of the experimental work in organic chemistry, both the organic preparation course and the research, was carried out in one very large laboratory room, holding about forty or fifty students. Thiele, a tall man of unbelievable girth, went through the laboratory every day and spent an adequate amount of time with every student once or twice each week. For reasons I do not quite understand, I failed to become acquainted with any of the students, other than two Americans doing research, nor did I learn on what problems any of them were working. Perhaps this was due to the fact that Thiele was not lecturing during my semester at Strassburg, perhaps it was because I was a foreigner and Strassburg was a rather small provincial town, perhaps it was due to the German formality, which did not permit familiarity between the undergraduates and the only post doctoral student in the laboratory. I am sure none of these reasons, nor all of them together are fully adequate. Unlike Chicago or Berlin, there was no noticeable discussion of their problems among the students, although there was no marked unfriendliness at any time.

Although I did not know on what problems the other students were working, I am sure that they knew that my research involved dichlorostilbene. The compound, though not volatile is a powerful lachrimator if only the minutest trace comes into contact with the eyes. One day I

got a little of it on my hands without realizing what had happened. Consequently I did not wash before leaving the laboratory to attend a lecture in another part of the building. Shortly after the lecture began, everyone in the audience who had touched any one of the door knobs I had touched on my way, was sitting there with streaming tears, with eyes half-closed and with the most woebegone expression on his face. I cannot imagine how the lecturer explained to himself the grief he seemed to be causing.

### Johns Hopkins University

I ended my student days by returning to America to become the research assistant of Prof. Abel of the department of physiological chemistry in the Johns-Hopkins School of Medicine. There my problem was an attempt, which was only partially successful, to isolate the toxic principle of that most poisonous of mushrooms, the *amanita phalloides*. Whether this adventure in biochemistry, when added to my studies in the fields of organic chemistry, physical chemistry and physico-organic chemistry was the best preparation for my career as an inorganic chemist, I cannot say. Be that as it may, it was certainly the best type of preparation for a teacher of general chemistry.

### The Public Attitude Toward Science

Let me turn from reminiscences to a problem of the future of science to which I have long given some thought. During the more than fifty years since I began my study of chemistry, there have been several changes in the attitude of the intelligent and well-informed public toward science. At the time I entered the university, one might say that there was no such attitude at all, because very few people had any knowledge or understanding of scientific matters. I am sure that when I mentioned my ambition to become a chemist to the older members of my family and their friends—and they were on the whole, well-informed people—all that most of them could envisage was a picture of me standing behind a counter handing out prescriptions and patent medicines, or mixing that delicious new drink, an ice cream soda. To be sure, due to economic and social developments in our country, that situation did not persist. Almost all of our tillable free land had been settled, and there was talk of the danger that our agriculture could not support our rapidly growing population; a series of financial panics raised the specter of chronic unemployment; the good old days were about to end.

The public turned to science to dispel the gloom. New fertilizers would restore the richness of the soil. New inventions would bring employment and good wages to all. Chemistry would provide new products to in-

crease our wealth. The expected benefits were not to be limited to material improvements. Science and technology would greatly reduce the need for human labor, and to all men, rich and poor, there would accrue a reasonable amount of leisure. And out of this leisure of the many there was to arise a new culture, superior to cultures of the past, because it was based on a broader human foundation.

### The Criticism

Applied science and invention have more than fulfilled what was expected of them. Nevertheless, although interest in scientific phenomena and their applications is now greater than ever, many thoughtful people are beginning seriously to doubt the value of science as a beneficent social force. They are asking what is the good of increased productivity of the soil, of the new conveniences and comforts, if these are denied to most of the people of the world; many are wondering whether these improvements are making happier those who can take advantage of them. These critics ask what is the ultimate good of improved communications, if bringing the peoples of the world closer together increases the tensions existing among them. They will even ask, what is the good of prolonged life, if the added years are to be years of unemployment, of idleness and of frustration. And the conviction seems to be growing that scientific technology, which has made the new leisure possible, has also created distractions which divert attention to trivial activities from matters of the mind and of the spirit. The voices of these critics have risen to a clamor since the last war, for they cry out that science is being used to destroy and kill, rather than to build and preserve.

Scientists have often attempted to answer these criticisms by protesting that these evil consequences are by-products of their work, far from its real objectives. Often this answer is taken to imply that the sole function of science is to increase our knowledge and understanding of the world in which we live, and that practical applications are the function of technology. I do not like that reply. Scientists should be proud, not apologetic, about the technological developments based upon their labors, since the best foundation for social progress is improvement in men's physical environment and well being. When there are evil by-products accompanying these developments, the scientist must do what the industrial chemist does when obnoxious by-products result from his operations—he must cooperate with others in his community to neutralize, dispose of, or avoid the ill effects of his otherwise desirable undertaking.

### The Positive Reply

But there is a more fundamental reason for my dislike of the type of answer I am discussing. That an-

swer is negative; what is needed is a positive reply. By that I mean that it is necessary for scientists to convince their critics that there are in science more profound values than are usually advanced in its defense. There are many such values, but to illustrate what I have in mind, I need discuss only one.

It is my conviction that one of the most important, even if an indirect consequence of scientific thinking, has been its contribution to the ideals in whose pursuit this country was founded, and in whose defense we have fought two world wars and are again arming ourselves. The ideals of liberty and freedom are the consequences of the concept of the dignity of the individual. In my opinion, this concept owes as much to science as it does to philosophy and to religion. It is to a great extent based on the contention of science that man is primarily a part of nature and not primarily a part of a political, a social, or an economic order. As a part of nature, each man's needs, and particularly his potentialities, should, insofar as is consistent with his responsibilities to his fellow men, be determined by natural laws, and by the endowments nature has given him rather than by man-made laws or man-made distinctions of caste, or of economic, political, or social stratification.

I know that I have not informed myself adequately or given enough thought to these more profound values, a scholarly evaluation of which requires a far greater knowledge of history and philosophy than I possess. I suspect that I am not alone in this respect among the scientists of my generation. I hope the younger members of our profession will not make the same mistake, for the future influence of science on society lies in their hands. If these values of science are not strongly and repeatedly emphasized, science will become merely the handmaiden of industry and of government. As a result it will be reduced to the purely materialistic influence of which it is now unjustly, but often accused. If that occurs, true science will wither and die. With its death one of the major supports of the concept of the dignity of man will be lost, as will be his right to those freedoms without which the human spirit cannot flower.

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# A Colleague and a Friend

**Dr. W. C. Johnson**

*Chairman, Department of Chemistry, University of Chicago.*

(Presented at the Honor Scroll Award of the Chicago AIC Chapter to Dr. H. I. Schlesinger.)

WE HONOR a man who has been associated with chemistry in Chicago for more than fifty years, and who during this period has not only exerted a marked influence on the development of chemistry itself but has also contributed immeasurably to the development of chemists through his teaching and guidance.

THE AMERICAN INSTITUTE OF CHEMISTS was formed some years ago for the express purpose of devoting its efforts to the problems and the subsequent development of the chemist as an individual, rather than to the problems of chemistry as a science. In focusing its efforts on the chemist, it has performed a unique and invaluable service to the profesion, which is too often overlooked in these days of such rapid advances in all branches of science. I would like to express to the Chicago chapter of THE AMERICAN INSTITUTE OF CHEMISTS, on behalf of the chemists of the Chicago area, our sincere appreciation of the accomplishments they have attained in furthering chemistry as a profession.

Dr. H. I. Schlesinger is a man who well fulfills the objectives of THE AMERICAN INSTITUTE OF CHEMISTS, in addition to his accomplishments in research in the field of inorganic chemistry.

Dr. Schlesinger was born in Minneapolis, October 11, 1882. While a boy of only six years, the family moved to Chicago. He attended a private grammar school (Schultz's School) on Chicago's north side, from which he was graduaated in 1896. He then became enrolled in Lake View High School, and was graduated in 1900. It had been his ambition initially to study medicine, but he was dissuaded from this endeavor by his family physician who believed his eyes would give him trouble and, as a consequence he would be greatly hampered in medicine. In spite of the fact that Dr. Schlesinger has termed this advice as "a foolish notion", I am reminded of the saying, "foolish notions often lead to great ideas." Although I am confident that Dr. Schlesinger would have been highly successful in any profession, nevertheless it was a fortunate occasion to the chemists, when he was driven from medicine into chemistry.

Schlesinger had made up his mind

before entering college that chemistry was the field he wanted to follow as a life profession. He entered the University of Chicago as a freshman student on October 1, 1900. Two and one-half years later, in March 1903, he received the B.S. degree. It appears that even in the early days there must have been a Chicago plan of some sort, perhaps not too greatly different from the present one, which would permit a student to complete all of his undergraduate training in such a short period of time. However, I am certain that, plan or no plan, his scholastic progress and attainments were such as to make it impossible to hold him any longer as an undergraduate student. Two and one-half years later, August 1905, he was awarded the Ph. D. degree. His research for the degree was carried out under the direction of the late Dr. Julius Stieglitz who was influential through his advice and kindly interest in moulding Schlesinger's career in chemistry probably more than any other man. There has been no single individual during the past fifty years of Dr. Schlesinger's scientific and professional life who has had as great an influence on not only his scientific development but on his life in general as did Dr. Stieglitz whom Dr. Schlesinger has always held in the highest esteem. Schlesinger's research thesis was in the field of physical-organic chemistry and was concerned with "Reactor Rates of Hydrolysis of Imido Esters."

### Study Abroad

At the time he was a student at The University of Chicago, he came under the influence of a number of very stimulating teachers and investigators. A few were Alexander Smith, John Ulrich Nef, Julius Stieglitz, and Herbert McCoy in chemistry, in addition to Robert Millikin and Albert Michaelson in physics. All of these men had a great influence on Schlesinger's scientific develoment and in particular on his development as a teacher, since these men were exceptionally fine teachers in their respective fields. After receiving the Doctoral Degree, Schlesinger decided to spend a year or so abroad. He entered Nernst's Laboratory in Berlin in October 1905 and remained there until the following August. While in Nernst's Laboratory, he developed a method for determining the specific heats of liquids. Furthermore, he became acquainted with a number of young chemists who later occupied important positions in Germany as well as in this country and some of these friendships were maintained for a number of years. Nernst was a man of many ideas, although he was not an exceptionally able experimenter. However, he provided tremendous stimulation for any young man entering chemistry as a profession.

In September, 1906, Schlesinger moved on to Thiele's Laboratory at Strassburg and remained there for

about five years, working on a problem in organic chemistry which was concerned with "Diazotation of Dichlorostilbene." Thiele's Laboratory was quite different in character from Nernst's Laboratory in Berlin, but Schlesinger's stay there did much to broaden his training and interests in chemistry.

In February, 1907, he accepted a position as research assistant to Dr. Abel at John Hopkins Medical School in Baltimore. At that time, Dr. Abel was one of the outstanding research men in the field of physiological chemistry in the United States, in fact, in the world. Schlesinger spent nearly a year there working on the extraction of the toxin of *amanita phalloides*. He succeeded in concentrating the toxin, but did not complete the isolation of the active constituent. After some six months at the Hospital, he became associate in chemistry at the University of Chicago at a salary of $800.00 per year.

**Research Interests Shifted**

His initial position at Chicago, so far as teaching was concerned, was to be limited to general chemistry, qualitative analysis and inorganic preparations. Since he was expected to teach subjects which for the most part were inorganic in character, he shifted his research interests to the inorganic field, in spite of the fact that he had no special training in that field. It would be better for many of our younger men today to follow Schlesinger's example in a broad training in chemistry before deciding upon any specialty for intense investigation. The development of the various fields of chemistry has progressed so rapidly in the past two or three decades that it is difficult for young men to obtain such a broad training without sacrificing reasonably rapid salary advancement. Post Doctoral fellowships have helped considerably to alleviate this situation in our training practices, but even they do not provide the opportunity for training outside one's special field. I am convinced that Schlesinger's versatility in chemistry is in a large measure due to the unusually broad training he had before deciding upon his major field of research.

Schlesinger, however, began his research program in physical chemistry on the "Conductance of formates in anhydrous formic acid as a solvent." In 1910, he was appointed an instructor in chemistry, and it was this year he also was married to Edna Simpson. A year later he was made an assistant professor and, in 1917, he was promoted to associate professor. Five years later, 1932, he was promoted to full professor and it was at this time that he was also appointed secretary of the department of chemistry.

For the next twenty-four years, until the beginning of 1946, Dr. Schlesinger was largely involved in admin-

istrative work in the department. Shortly following the first world war, after Dr. Stieglitz had taken over the chairmanship of the department as a result of Dr. Nef's death in 1915, the industrial chemical development in the country began to become apparent. This development progressed rapidly; a large number of students came to the University for graduate work in particular. As a consequence, the administrative duties of the department were greatly increased and Schlesinger was selected by Stieglitz to assume some of these duties. Schlesinger spent a good deal of his time in counselling students and not only became well acquainted with the students themselves but with many of their problems as well over this twenty-five year period. Many will recall his meticulous and accurate assessment of these problems and his kindly interest in working with the student to solve them. At the same time, Schlesinger was able to carry a teaching load comparable to that of any other man of the department and also to maintain his interest in research through a number of graduate students with whom he worked closely and sympathetically.

### Administrative Work

In 1933, Dr. Stieglitz reached the age of sixty-five, which shortly prior to this time had been deemed by the University administration as the age at which one should retire. Although Dr. Stieglitz continued to teach on a part-time basis until his death in January 1937, the administrative duties of the department fell to Dr. Schlesinger, who almost single-handed carried the heavy burden placed upon him until December, 1945. This period of nearly thirteen years between 1933 and 1946 was probably the most critical in the history of the department; furthermore, for the chief adminstrative officer they were the most difficult and arduous years. The depression years added to the difficulties immeasurably, and then the war years increased the intensity of the problem still more. During the early part of this period the main objective was to maintain faculty salaries at their established levels, which was done, and at the same time reduce each year successively the amount of the departmental budget. This was a feat which was accomplished by Dr. Schlesinger's careful, painstaking planning, and to this day I do not see how it was done. In the war years, about half the staff left the University for projects outside of the department's jurisdication in Chicago and such outlying stations as Washington, Oak Ridge, Pittsburgh and Los Alamos, to mention only a few. At the same time, the department was called upon to train several thousand students in the ASTP program, to conduct during the war twenty-nine different War Research Projects, running the gamut of War and Defense activities, and to main-

tain a curriculum for the training of quite a sizeable number of students for degrees at all levels, and finally to conduct some fundamental research not specially labeled for the War effort.

How this was ever done, I do not know. It was done, and it was done because the department had in Dr. Schlesinger an extremely patient, optimistic and able administrator who just went ahead and did things in the face of almost insurmountable obstacles, with a depleted staff and limited funds. The Department today, as well as its alumni, owes to Dr. Schlesinger a debt of gratitude, especially for the services he performed during these years, which is impossible of repayment in any measurable sense. We often forget these achievements once they are past, but personally I cannot forget them since my experience of the past five years in the department has impressed upon me his accomplishments in such a manner as to be everlasting. Furthermore, it was during this period of the "trying years", that he initiated and developed his research program on the boron hydrides and the borohydrides, which program has not only turned out to represent his most important scientific contributions to the field of chemistry, but which also represents the development of a really new chemistry. His initiative and imagination in this field have led to what Prof. Charles A. Kraus stated was the most important development in inorganic chemistry since the studies of Werner on Complex compounds during the early part of the century.

On October 1, 1949, Dr. Schlesinger, according to the University records, retired. As far as I have been able to determine, retirement at the University means that you no longer have any formal administrative and teaching responsibilities, but that you do twice as much work as previously at about one-half to one-third as much pay. Dr. Schlesinger has been no exception to this statement. He has continued his research program, in collaboration with a number of students and assistants on the chemistry of the borohydrides. The program has been supported by the Naval Research Laboratory and the Office of Naval Research, and it promises to yield more and more important results of a fundamental character in an exciting and new field. We hope that his imagination, coupled with his labors, will permit him to continue to contribute to chemistry, as he so chooses, for many years to come.

Dr. Schlesinger has been married, very happily so, for more than forty-one years. He has two sons, both of whom have found considerable success in the advertising field, Richard in Chicago, and Allen in Minneapolis, and and there are grandchildren too.

As one who has known Dr. Schlesinger and who has worked with him closely for nearly twenty-five years,

**Dr. Schlesinger Accepts Scroll from AIC President Flett**

I would like to emphasize what I have appreciated in his character more than anything else. It is devotion to tolerance and freedom which I have appreciated deeply. Every student as well as colleague has been given an equal opportunity to demonstrate his ability and worthiness. He has, perhaps unconsciously, always adhered to this doctrine. The new and young instructor in the Department has always had complete freedom to teach his courses as he so desired, to carry out his own research, not only unhampered but with sympathy and encouragement. This has meant a great deal to the younger men of the staff of the past twenty-five years. Friendly criticism and help were always at hand We appreciate more than words can express the atmosphere which was created for freedom in teaching and in research.

To Dr. Schlesinger, I would like to express, on behalf of the members of the department, the alumni, and expecially his students, our sincere appreciation of his unselfish efforts as a teacher, an investigator, and an administrator. Furthermore, we hope that this occasion will mark only an initial step toward greater goals in research, and in the friendship which all of us cherish.

# Borohydrides - A Case History of Academic Exploratory Research

**Prof. H. C. Brown**

*Purdue University*

(Excerpts from a paper presented at the Honor Scroll Award of the Chicago AIC Chapter to Dr.H.I.Schlesinger.)

A REVIEW of Prof. Schlesinger's activities reveals an unusual balance between the different facets of his professional career. He is the author of one of the leading textbooks in the general chemistry field. He is widely known as an inspiring teacher. In the fifty years that he has been associated with the department of chemistry of the University of Chicago, thousands of students have enjoyed his stimulating lectures in general chemistry and the physical science survey course, as well as his equally stimulating and thought-provoking lectures in advanced courses.

Prof. Schlesinger's ability to present the most abstruse topics in a highly interesting and lucid manner was frequently a topic for admiration. I recall hearing of one occasion when he addressed a group of engineers. His topic dealt with his research in the Werner complexes. A subject in which any engineer might be expected to be less interested would be difficult to find. Yet he succeeded in so interesting his audience and maintaining its attention that those who were fortunate enough to be present still marvel at his accomplishment.

Teaching elementary courses in chemistry is usually so demanding of one's time and energy that few such teachers find it possible to carry on an active research program. Not only has Prof. Schlesinger carried on such an active research program throughout his professional career, but for the past twenty years he has made contributions to the field of inorganic chemistry which are probably the most important since those of Alfred Werner at the turn of the century.

These accomplishments appear all the more remarkable in view of Prof. Schlesinger's numerous other contributions to the profession. He has been very active in the affairs of the local section of the American Chemical Society as well as of the national organization, serving both in many capacities. From 1923 to 1933 he was secretary of the department of

chemistry, and during the period, 1933 to 1945, he was chairman of the department's executive committee. In the latter period, most of the administrative problems of the department were directly his responsibility. He carried the department through the difficult years of the depression and of the war, while maintaining the department's high position throughout. As a respected leader on the University of Chicago campus, his opinion was eagerly sought on questions of policy. He gave unstintingly of his time to the University Senate and to numerous University committees.

### Research Activities

Dr. Schlesinger's research activities fall into several major categories. In the period, 1910-1920, he carried out a number of studies of formic acid as a solvent, paying particular attention to the conductivity of electrolytes in this unusual solvent. During the twenties, he studied the chemistry of permanganates and manganates, and the complexes of iron, chromium, and platinum.

Beginning with the thirties, Prof. Schlesinger again shifted his field of research. He became interested in the boron hydrides. Up to then no research on these compounds had been carried out in this country. Practically all of the research in this field was due to the efforts of Prof. Alfred Stock and his studies in Germany. Undertaking studies in this new field, Dr. Schlesinger and his students soon developed new improved syntheses of diborane and some of the higher hydrides of boron. They prepared a number of derivatives of diborane and studied their properties.

In these studies, Dr. Schlesinger and his students were primarily interested in the information which a study of diborane and its derivatives might throw on the nature of the bonding in this unusual molecule. On the basis of the classical theory of valence one should have anticipated that the simplest hydride of boron should have the formula $BH_3$. It was of considerable interest and importance to learn something of the forces which cause this hypothetical unit to dimerize to form the stable molecule $B_2H_6$. Another example of such association of electron deficient units is furnished by trimethylaluminum, which normally exists as the dimer.

It occurred to one of Dr. Schlesinger's students to attempt to prepare a mixed compound by combining a borine unit with a trimethylaluminum unit, $H_3BAl(CH_3)_3$. This was obviously an impractical idea, but the general policy of academic research favored the testing of impractical ideas, sometimes with startling results. In the present instance, the student did not obtain the desired product. A new and entirely different compound was formed, aluminum borohydride. This was an unexpected

development and only remotely connected with the original objectives of the research on diborane. However, it offered interesting possibilities and attention was immediately turned to the synthesis of other borohydrides. Within a relatively short time, first beryllium borohydride and then lithium borohydride were prepared and their properties determined. Aluminum and beryllium borohydride proved to be the most volatile of the known compounds of these metals. The lithium compound on the other hand, was a salt-like substance, very stable, soluble in water and an excellent reducing agent.

In 1941, Prof. Schlesinger was requested to undertake the synthesis of new volatile compounds of uranium of low molecular weight. In view of his recent experience with the volatile borohydrides of aluminum and beryllium, it occurred to him to undertake the synthesis of a borohydride of uranium. This was prepared. It proved to be quite volatile. Actually it and a number of its derivatives are the most volatile compounds of tetravalent uranium. Moreover, the molecular weights are low. The molecular weight of uranium borohydride is 298, only 60 units greater than that of uranium itself.

There was naturally considerable interest in these compounds and relatively large scale methods for their manufacture were devoloped. In the course of this work, new and improved processess for the synthesis of diborane and both lithium and sodium borohydrides were developed. These borohydrides liberate hydrogen on reaction with water. The weight volume relationships are highly favorable and they were of interest for the field generation of hydrogen. Investigation proved their usefulness for this application. The borohydrides are excellent reducing agents and sodium borohydride was observed to reduce aldehydes and ketones readily at room temperature. Continuation of these studies led to the discovery of similar aluminum compounds, and lithium aluminum hydride was developed. Sodium borohydride and lithium aluminum hydride are not only excellent reagents for carrying out laboratory reductions, but they are being utilized commercially, particularly in the pharmaceutical field.

## Exploratory Academic Research

In Prof. Schlesinger's research program one observes the tremendous advantage of the traditional system of exploratory academic research. Originally working with formic acid as a solvent, Prof. Schlesinger readily turned his field of research away to the markedly different field of the complexes of iron, chromium and platinum. Following this phase in his program, he again shifted his studies to an entirely new field, the hydrides of boron. An impractical experiment led to the discovery of the

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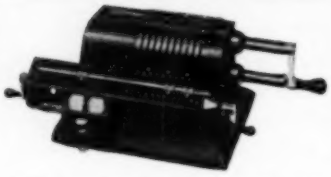

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metallo borohydrides and Prof. Schlesinger again shifted his investigations to the preparation and study of these new compounds. This ready shift in one's research interest, the ease with which new ideas could be tested and developed is a highly valuable characteristic of university research of the past half-century . . .

An examination of Prof. Schlesinger's rich and varied research experience suggests that there are many advantages to the free conditions under which he has worked. It suggests that freedom of choice of research problems is an important constituent of our research scheme and necessary for continued satisfactory advance. His great accomplishments point to the importance of fundamental exploratory research in the universities and emphasize the importance of maintaining conditions conducive to such research.

We may gain a further lesson from Prof. Schlesinger's career. His research accomplishments have been many and varied. Yet they were not achieved at the cost of his teaching activities and his participation in the life of his profession. His career emphasizes the advantages of a balanced program. It is indeed a pleasure to give honor to a great scientist, an inspiring teacher and a good friend.

(Dr. Brown's complete paper, in which he shows how present financing of university research seriously limits the traditional freedom of this university work, will be published in *Chemical and Engineering News.*)

**To India:** James G. Vail, F.A.I.C., accompanied by Mrs. Vail, to be stationed at 24 Rajpur Road, Delhi, India, for a year. They will represent the interests of the American Friends Service Committee and the corresponding English Quaker organization, Friends Service Council, in maintaining a center where international bridges of understanding are fostered and from which practical services of technical and material assistance are undertaken. A village project of agricultural and health improvement with Point 4 funds is in an advanced planning stage.

# Necrology

## William D. Harkins

Dr. William Draper Harkins, Andrew MacLeish Distinguished Service professor emeritus, University of Chicago, died May 7, 1951, at the age of seventy-seven. He was born in Titusville, Pa. He received the A.B. and Ph.D. degrees from Stanford University, and also studied at the University of Chicago and the Hochschule in Karlsruhe.

He was instructor in chemistry at Stanford University from 1900 to 1901, then from 1901 to 1912, professor of chemistry at the University of Montana. During this period he also served as special agent for the U.S. Department of Justice, as research associate at Massachusetts Institute of Technology, as chemical investigator for the Mountain Copper Company, Anaconda Farmers' Association, and the state of Georgia. From 1912 to 1940, he was with the University of Chicago, as assistant professor, associate professor, and Andrew MacLeish Distinguished Service professor. He lectured at Mellon Institute, the University of Illinois and Cornell University. He served as consultant for many organizations, including government agencies.

He was a pioneer scientist in nuclear chemistry, presenting in 1915, the theory of the transformation of hydrogen into helium to which he attributed the radiation of the sun and stars. His special interests included the nucleus of the atom, the heat of the sun and stars, the composition of meteorites and stars, the synthesis and disintegration of atoms, the nature of nuclear reactions, surface energy, the effect of electrons in chemical reactions, and thermochemical measurements.

His professional societies were the National Academy of Science, the American Chemical Society, the American Association for the Advancement of Science, and the American Philosophical Society. He became a Fellow of The American Institute of Chemists in 1942.

He is survived by his wife, Mrs. Anna Louise Harkins; and two children, Dr. Henry Nelson Harkins and Miss Alice M. Harkins.

## Margaret R. Masten

Margaret Rawicz Masten, formerly lecturer at the University of Southern California, died September 14, 1950. She was born in Germany, May 22, 1898. She received the Ph.D. *magna cum laude* from the University of Breslau, Germany, in 1918. She received a diploma from the University-Centre Aix Marseille, France, in 1934.

She was an assistant in the Pharmacological Institute of the Royal University in Breslau from 1914 to to 1918, doing chemical analytical

work. From 1918 to 1933, she taught high school chemistry in Germany. After attending the University-Centre Aix-Marseille, she returned to Germany where she taught chemistry and physics from 1935 to 1939. When Dr. Masten came to the United States, she attended the University of Redlands and assisted in the German department, in 1940. She taught chemistry and mathematics in the La Rew School in California, from 1942 to 1943. She was a plant chemist with the Stauffer Chemical Co., Los Angeles, in 1943, and in 1943-44 she was an instructor in chemistry at Los Angeles City College, leaving there to become lecturer and supervisor of the organic chemistry laboratory at the University of Southern California.

She joined THE AMERICAN INSTITUTE OF CHEMISTS as a Fellow in 1945.

## Joseph J. Stivale, Jr.

Joseph J. Stivale, Jr., manager, Industrial Research Division, Brooklyn Varnish Manufacturing Co., Brooklyn, N. Y., died July 3, 1950, at the age of thirty-five. Born in Bloomfield, N. J., he received the bachelor of business administration degree from Rutgers University in 1938, and the master of business administration degree from New York University in 1942. He attended Bloomfield College and Newark College of Engineering, taking various courses in chemistry. He studied paint and varnish technology at the Polytechnic Institute of Brooklyn from 1946 to 1948.

He was with the Bakelite Corporation working on specification coatings from 1934 to 1939; with Gilbert Spruance Company doing development work on varnishes from 1939 to 1941, and in charge of testing and development of protective finishes with Ridbo Laboratories, Inc. from 1941 to 1943. He joined the Brooklyn Varnish Manufacturing Company in 1947 to do industrial research in the development of vinyls and technical service on all coatings. He was active in the New York Paint and Varnish Production Club.

Mr. Stivale became a Member of THE AMERICAN INSTITUTE OF CHEMISTS in 1948.

## James N. Taylor

James N. Taylor, retired acting chief, Chemical Unit, Bureau of Foreign and Domestic Commerce, Department of Commerce, died November 19, 1950, at the age of sixty-five. He was born in Smyrna, Delaware.

He received the B.S. degree in chemistry in 1913, and the M.Sc., in 1922, from George Washington University. He was assistant chemist at the Atlantic Refining Company from 1905 to 1908. In that year, he joined the U.S. Government in the Bureau of Animal Industry, transferring to the Bureau of Foreign and Domestic Commerce in 1927, from which he retired to Smyrna in 1945. In 1946,

he was recalled for special assignments, after which he moved to Blackbird, Delaware. In addition to government service, he was instructor of chemistry at Washington Preparatory School, the YMCA School, and George Washington University.

He was the author of many technical and semi-technical articles for popular and professional journals. For THE CHEMIST, he contributed, among other material, the department, "Chemists Abroad," articles on "Opportunities for Chemists in South America," and an illustrated article on stamps of the world which bore pictures of chemists or chemistry.

He was a Charter Member of THE AMERICAN INSTITUTE OF CHEMISTS and active in the formation of the Washington Chapter, which he also served as secretary for several years, as chairman in 1929-30, and as representative to the National Council. He also served on AIC committees. His interest in the professional status of the chemist was outstanding. He sent clippings regularly of professional news about chemists to the INSTITUTE. In March 1950, on his return from a vacation in Key West, he wrote:

**Here I am back again after a most enjoyable visit to a land of tropic splendor and exotic beauty . . . Among the journals to greet me on my return was THE CHEMIST — always intriguing with its news of the day about chemists and their progress, their thoughts and their doings. How the INSTITUTE has forged ahead! Also there were Department of Commerce publications with their wealth of information, notably the *Monthly Industry Reports* and *Foreign Commerce Weekly*.**

**I wonder how many AIC members know about the work of the department and avail themselves of its services, domestic and world-wide, and its published studies on economic aspects of chemical science and industry. Many of these articles delineate trends that may affect sooner or later the chemist's own economic status—his livelihood . . .**

Among his societies were Sigma Nu, Alpha Chi Sigma, the American Association for the Advancement of Science, the American Chemical Society, the George Washington Chemical Society, the All-Chemical Society of London; the Pyramid Society, and the Masons.

Three sisters survive him, Miss L. Ethel Taylor, Mrs. Theodore Ferguson, and Mrs. L. C. Reeves.

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**Chemical Exposition:** November 26th to December 1st, Grand Central Palace, New York, N.Y. At this 23rd Exposition of Chemical Industries, more than four-hundred companies will exhibit nearly two-hundred and fifty different classifications of equipment, materials, supplies, and services, combining the products of chemical engineering and industrial chemistry.

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**Staff Addition:** Robert H. Kittner appointed to General Development of Monsanto Chemical Company, as announced by W. K. Menke, F.A.I.C., department director.

**Friendship:** Between the scientists of the United States and those of France was expressed by Jerome Alexander, Hon. AIC, at a reception given by Rene de Messieres, cultural counselor to the French Embassy, and Dr. Worth Wade, president of the American Section of the Societe de Chimie Industrielle, in honor of the French Delegates to the XIIth International Congress of Pure and applied Chemistry, September 4th, at 934 Fifth Avenue, New York, N.Y.

Mr. Alexander stated:

"Benjamin Franklin a justement dit
"Que chaque personne a deux patries:
"La premiere, patrie de son allegiance—
"L'autre, certes, c'est la belle France.

"C'est avec grand plaisir que j'accepte au nom de mes camarades de la Section americaine de la Societe de Chimie Industrielle, ce joli souvenir que nous donne la Societe mere. Les chimistes et les savants americains sont toujours vivement sensibles aux grandes contributions scientifiques d'origine francais, non seulment au temps jadis mais continuellement, jusqu'a maintenant.

D'ailleurs, nous n'oublierons jamais le fait que le peuple francais supporte de tout coeur les principles de Liberte, Egalite, Fraternite, et qu'ils ont supporte notre lutte pour l'Independence, etabli il y a exactment cent soixante huit ans par la pacte de Paris, avec la flotte de Rochambeau, et le genie et le grand coeur de Lafayette.

"Vive la France, et l'amitie entre nos deux nations!"

**Speaker:** Dr. Gustav Egloff, Hon. AIC, at the XII International Congress of Pure and Applied Chemistry, New York, in September, on "Polymerization of Mono-Olefins with Solid Phosphoric Acid Catalyst." He spoke, also, at the meeting of the National Petroleum Association, September 14th, Atlantic City, N.J., on "European Refining and Middle East Oil."

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**Appointed:** John J. Healy, Jr., F.A.I.C., as assistant to Dr. Carroll A. Hochwalt, F.A.I.C., vice president in charge of research, development, and patent activities, for Monsanto Chemical Company, St. Louis, Missouri. Mr. Healy has been assistant general manager of Monsanto's Merrimac Division at Everett, Mass., where he was also chairman of the New England Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

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**From Government to Industry:** Dr. Edward U. Condon, director of the National Bureau of Standards, Washington, D.C., who resigned, as of September 30th, to accept the position of director of research and development of Corning Glass Works, Corning, N.Y.

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**Research Chemist:** Charles T. Dews, F.A.I.C., who joined the Liberty Oil Company, Mt. Pleasant, Texas. He was formerly with the Trumbull Asphalt Company of Delaware.

# COUNCIL

## OFFICERS

*President,* Lawrence H. Flett
*President-elect,* Lincoln T. Work
*Secretary,* Lloyd Van Doren
*Treasurer,* Frederick A. Hessel

## COUNCILORS

John R. Bowman, *At-Large*
Harry Burrell, *New Jersey Chapter*
Emmett B. Carmichael, *Alabama Chapter*
C. C. Concannon, *At-Large*
M. L. Crossley, *At-Large*
Gustav Egloff, *Chicago Chapter*
Gustav Egloff, *Past President*
G. J. Esselen, *At-Large*
M. J. Hiler, *Ohio Chapter*
L. B. Hitchcock, *At-Large*
H. O. Kauffmann, *Niagara Chapter*
M. J. Kelley, *New York Chapter*
R. H. Kienle, *At-Large*
Harold A. Levey, *Louisiana Chapter*
C. P. Neidig, *At-Large*
Donald Price, *At-Large*
Louis N. Markwood *Washington Chapter*
Maurice Siegel, *Baltimore Chapter*
M. Sittenfield, *Pennsylvania Chapter*
Foster D. Snell, *Past President*
Raymond Stevens *New England Chapter*
Manuel Tubis, *Los Angeles Chapter*
Florence E. Wall, *At-Large*

### October Meeting

The 278th meeting of the National Council was held October 10th at The Chemists' Club, New York, N.Y. President L. H. Flett presided.

The following officers and councilors were present: C. L. Brown, M. L. Crossley, G. Egloff, L. H. Flett, F. A. Hessel, M. J. Hiler, H. O. Kauffmann, M. J. Kelley, C. P. Neidig, F. D. Snell, R. Stevens, L. Van Doren, and Miss F. E. Wall. H. B. Hass, K. M. Herstein and V. F. Kimball were present.

The minutes of the previous meeting were corrected to add the name of C. P. Neidig in the list of those present and to insert the word "standing" after the fifth word in the fifth paragraph, so that the paragraph now reads: "President Flett announced that the *standing* committees appointed last year would be continued this year."

Dr. M. J. Kelley was appointed chairman of the Committee on Arrangements for the 1952 Annual Meeting.

President Flett reported that he had attended the Chicago Chapter meeting at which the Honor Scroll was presented to Dr. Schlesinger.

He reminded the Councilors that they had a particular responsibility to write to their friends who are not members of the INSTITUTE to urge them to take advantage of the INSTITUTE'S benefits.

He announced that Honorary Membership in THE INSTITUTE will be presented to Dr. John E. McKeen at a meeting of the New York Chapter to be held January 17th.

He read letters from two officers of the Royal Institute of Chemistry, commenting

favorably on the recent AIC Friendship Dinner.

A letter from Dr. N. Howell Furman, president of the A.C.S. acknowledging the AIC's message of greeting at the Diamond Jubilee, was presented. (See October CHEMIST.)

The Treasurer's report was accepted.

The Secretary's report showed that we now have 2558 members in the INSTITUTE. The Secretary announced with deep regret the deaths of the following members: Alan Porter Lee, F.A.I.C., on August 9th; Dr. James F. Couch, F.A.I.C., on August 9th; Dr. Walter E. Thrun, F.A.I.C., on August 19th, and Henry Howard, F.A.I.C., on August 26th.

A nominee was selected for the "Ten Outstanding Young Men" award of the Junior Chamber of Commerce.

Dr. Kelley, chairman of the Committee on Arrangements for the Annual Meeting, presented a list of hotels, facilities, and prices, for the consideration of the Council. The Hotel Commodore, New York, N.Y., was selected as the place of the meeting, to be held on May 7th and 8th.

President Flett presented a report by C. S. Kimball, chairman of the Committee on the Friendship Dinner.

Dr. Kauffmann reported that the Niagara Chapter would hold its first meeting of the season on October 17th, at which an expert would demonstrate glass blowing.

Dr. Egloff reported that the Chicago Chapter is holding regular meetings bimonthly, which emphasize the professional side of chemistry.

Mr. Hiler reported that the Ohio Chapter plans a get-together meeting soon.

Dr. Brown reported that the Council of the New Jersey Chapter held a meeting where they discussed the $15 million bond issue for teachers colleges in New Jersey. The Chapter sent out 513 questionnaires asking the members what type of meeting they preferred. Of the 120 replies, the majority of votes were cast for "New Chemical Developments," "New Tools for the Chemist," and "The Chemist's Place in Civic Affairs."

Dr Kelley stated that a discussion meeting of the New York Chapter would be held in December; that Honorary A.I.C. Membership would be presented to Dr. McKeen on January 17th; that another discussion meeting would be held in March, and that the Annual Meeting of the Chapter would be held on May 22nd.

Dr. Stevens reported that the New England Chapter had just changed chairmen, since Mr. Healy had been transferred to St. Louis, Missouri. The new chairman is A. W. Fisher, Jr.

Mr. Neidig stated that the Pennsylvania Chapter had just held a successful meeting and that the Chapter's first Honor Scroll would be presented to Dr. Emil Ott on December 6th.

Dr. Kauffmann discussed the importance of suitable education for young people and recommended this subject as one in which the Chapters should take particular interest.

Miss Wall reported that Miss Calm Hoke, charter member, and first editor of THE CHEMIST, is seriously ill. The Council expressed its sympathy.

The following new members were elected:

## FELLOWS

**Batson, Davis Monroe**
*Consultant,* Department of Defense, Washington, D.C.

**Bezman, Irving I.**
*Senior Fellow,* Mellon Institute, Pittsburgh 13, Pa.

**Brown, Jr., Owen J.**
*Vice President and General Sales Manager,* Godfrey L. Cabot, Inc., 77 Franklin Street, Boston, Mass.

**Freedman, Robert Wagner**
*Research Chemist,* Battelle Memorial Institute, Columbus, Ohio.

**Greene, Robert Alva**
*Professor & Executive,* Dep't. of Bacteriology, College of Osteopathic Physicians & Surgeons, 1721 Griffin Ave., Los Angeles 31, Calif.

**Hammett, Louis P.**
*Professor of Chemistry,* Columbia University, New York 27, N.Y.

**Hays, Edwin E.**
*Ass't. General Manager & Director of Research,* Armour & Co., Research Division, Union Stock Yards, Chicago 9, Illinois.

**Heggie, Robert**
*Director of Research,* American Chicle Co., 30-30 Thomson Avenue, Long Island City, N.Y.

**Hoffpauir, Carroll Lea**
*Chemist in charge of analytical section,* Southern Regional Research Lab., 2100 Robert E. Lee Blvd., New Orleans, La.

**Hughes, Everett C.**
*Chief,* Chemical & Physical Research Division, Standard Oil Co. (Ohio) 2127 Cornell Road, Cleveland 6, Ohio.

**Jackson, Henry James**
*Research Chemist,* U. S. Ordnance Dept. of Army, Picatinny Arsenal, Dover, N.J.

**Laughlin, Kenneth Clifford**
*Manager,* Pilot Plant Div., Hercules Powder Co., Wilmington, Delaware

**Marion, Alexander P.**
*Ass't Professor,* Dept. of Chemistry, Queens College, Flushing, N.Y.

**McClain, George Lucien**
*Superintendent,* Metal Decorating Dept., Aluminum Seal Co., Inc., Subsidiary Aluminum Co. of America, Richmond, Indiana

**Noone, Joseph A.**
*Technical Advisor,* Nat'l. Agricultural Chem. Association, 910 17th Street, N.W., Washington, D.C.

**Senkus, Murray**
*Director of Research & Development,* Nox-Rust Chemical Co., 2429 South Halsted Street, Chicago, Illinois.

**Smith, Walter Russell**
*Chief Research Chemist, Director Fundamental Research,* Res. & Development Dept., Godfrey L. Cabot, Inc., 77 Franklin St., Boston 10, Mass.

**Stansbury, Mack Fulton**
*Chemist,* Analytical & Physical Division, Southern Regional Research Lab., 2100 Robert E. Lee Blvd., New Orleans, La.

**Swaney, Miller W.**
*Assistant Director,* Chem. Div., Standard Oil Dev. Co., Linden, N.J.

**Watt, Lynn Andre**
*Special Ass't. to General Manager,* Monsanto Chem. Co., St. Louis 4, Mo.

**Wolff, Hans**
*Head,* Oil & Protein Research, A. E. Staley Mfg. Co., Decatur 60, Ill.

## MEMBERS

**Clitheroe, Jay B.**
*Tech. Sales Representative,* Sales Dept., Oldbury Electrochemical Co., 19 Rector Street, New York 6, N.Y.

**Foster, Charles H., Jr.**
*Technical Sales Representative,* Sales Dept., Oldbury Electro Chem. Co., 19 Rector Street, New York 6, N.Y.

**Goretta, Louis Alexander**
*Research Chem.,* Development Dept., Armour & Co., 1425 W. 42nd St., Chicago, Illinois

**Grehn, Edward William**
*Chief Chemist,* Control, The J. R. Watkins Co., 231 Johnson Avenue, Newark, N.J.

**Lord, George C.**
*Sales Manager* of N.Y. Plant, Fisher Scientific Co., New York, N.Y.

**Mattair, Robert**
*Ass't. Director,* Tech. Service Division, Oldbury Electrochemical Co., Niagara Falls, N.Y.

**Winchester, Charles L.**
*Research Chemist,* Research Lab., Oakite Products, Inc., 22 Thames St., New York, N.Y.

## ASSOCIATES

**Lair, Theodore Mark**
*Chemist in Charge, Lab.,* Standard Brands, Inc., 916 S. Harvard, Dallas, Texas.

**Lambert, John Harris**
*Chemist,* The Barrett Division, Allied Chemical & Dye Corp., 36th & Grays Ferry Avenue, Philadelphia, Pa.

**Luckey, Manley J.**
Chemistry Dept., San Bernardino County (Calif.), 780 E. Gilbert Street, San Bernardino, Calif.

**Rue, Joseph I.**
*Technical* Sales Representative, Sales Dept., Oldbury Electrochemical Co., 19 Rector Street, New York 6, N.Y.

## RAISED FROM MEMBER TO FELLOW

**Henick, Albert S.**
*Chemist,* Quartermaster Food & Container Institute, 1849 West Pershing Road, Chicago, Illinois.

# AIC Activities

C. P. Neidig, F.A.I.C.

## Niagara Chapter

*Chairman*, Dr. Emil R. Riegel
*Vice Chairman*, Dr. Alvin F. Shepard
*Secretary-treasurer*, Dr. Robert H. Schuler
*Representative to National Council*, Dr. Hans O. Kauffmann

The Niagara Chapter held the opening meeting of the current year at Canisius College, October 17th. Alfred L. Brandt, a glass apparatus specialist for the Linde Air Products Company, demonstrated the general principles of glass working with the construction of various novelties and chemical glassware. The novelties, including a swan, a colorful tropical fish, and a crystal schooner, were given as prizes to the attending members. Mr. Brandt is continuing in an art which has been in his family for the past three-hundred years.

## Ohio Chapter

*Chairman*, Dr. George F. Rugar
*Chairman-elect*, Dr. Otis D. Cole
*Secretary-treasurer*; Harold M. Olson
*Representative to National Council*, Dr. Malvern J. Hiler

The Ohio Chapter is cooperating with the Cleveland technical organizations in presenting the third annual dinner of the chemical professions of Cleveland, on Thursday, November 8, 1951, at the Hotel Hollenden. The speaker will be Dr. Paul D. V. Manning, F.A.I.C., who will give an address on "Our Profession—Its Obligation and Opportunity"

## Pennsylvania Chapter

*Chairman*, Ronald J. Baird
*Chairman-elect*, Adalbart Farkas
*Secretary-treasurer*, John Staub
*Representative to National Council*, Marcus Sittenfield

The Pennsylvania Chapter held its first meeting on the fourth of October. The speaker was C. E. Waring, vice president of Davison Chemical Company, who discussed the European chemical industry. Mr. Waring put special emphasis upon the problems inherent to running a chemical business in Europe as well as the impact of sulfur and sulfuric acid shortages in Europe.

## National Council Meetings

Meetings of the AIC National Council will be held at The Chemists' Club, 52 E. 41st Street, New York, N.Y., at 6:00 p.m., on the following dates:

November 14, 1951
January 9, 1952
April 9, 1952

## When You Are in Washington

A.I.C. members, who are now in Washington, D.C., but affiliated with other Chapters, are requested to make their presence known to the Secretary of the Washington Chapter, so that they may be placed on the mailing list to receive notices of the Chapter's meetings. A luncheon meeting is usually held each month and it will be a pleasure to welcome all INSTITUTE members. The Secretary is Paul E. Reichardt. Phone Republic 3275, Extension 221.

## What Industry Expects of You

A panel discussion on the topic, "What Industry Expects of You", will be sponsored by the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, at the Hotel Commodore, Thursday, December 13, 1951.

On the panel are the following representatives from industry:

*In Production*: Peter J. Kornett,

superintendent, Oakite Products; *In Technical Sales*: Carl Setterstrom, sales manager, Textile Fibres Department, Carbide and Carbon Chemicals; *In Research*: Robert C. Cooney, research director, H. Kohnstamm & Co.; *In Technical Service*: Gordon O. Cragwall, director of technical service, Chas. Pfizer & Co.; *In Product Development*: Dr. Sidney Sussman, chief chemist, Water Service Laboratories.

Dr. H. B. Hass of General Aniline & Film Corp., chairman of the Chapter, will preside at the meeting. The event is the first in a series of New York Chapter affairs for the most active year in its long history. Among the planned meetings for the year: A dinner meeting for the 1952 Honorary Member; a buffet supper in honor of student medalists, and the annual honors award meeting to be held in the Spring.

Dr. Albert Guiteras of Hudson Laboratories 117 West 13th St., New York 11, N.Y. is in charge of arrangements and reservations. The meeting was set up by Dr. Robert Ginell, assistant professor, Brooklyn College, who is chairman of the program committee.

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## First Honor Scroll Award

The first Honor Scroll to be awarded by the Pennsylvania Chapter will be presented on Thursday, December sixth, to Dr. Emil Ott, F.A.I.C., director of research of Hercules Powder Company, at a meeting in the Penn-Sheraton Hotel, 39th and Chestnut Streets, Philadelphia.

A reception to Dr. Ott will be given by the Hercules Powder Company at 6:30 o'clock, followed by a dinner at 7:15. Dr. Walter J. Murphy, Hon. AIC, will speak for the honor recipient. President L. H. Flett will make the presentation of the Scroll. Dr. Ott will deliver an address entitled, "I am Proud to be a Chemist."

The Pennsylvania Chapter extends a cordial welcome to INSTSTUTE members and other friends of Dr. Ott from areas outside the Chapter boundaries. Please send reservations to Dr. V. V. Bollino, Allied Chemical and Dye Corporation, Barrett Division, Margaret & Bermuda Sts., Philadelphia, Pa. Tickets are $4.75 each, and reservations should be made before November 29th.

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**Honored:** Dr. William C. Geer, F.A.I.C., of Ithaca, N.Y., inventor of the inflatable rubber De-Icer for aircraft and the vulcanized golf ball cover, when he received the Charles Goodyear Medal for outstanding achievements in the chemistry of rubber. The presentation was made by the American Chemical Society's Division of Rubber Chemistry, at the Hotel Commodore, New York, September sixth. In his medal address on "Strategy in Rubber Research," the former B. F. Goodrich vice president, in charge of research and development, said that the objectives of 1951 rubber research are "to produce within the continental United States all the raw materials required by the rubber industry." Dr. Geer, who holds forty patents, is a graduate of Cornell University, which recently honored him by establishing the William C. Geer Laboratory of Rubber and Plastics.

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**A Layman's Impression:** Of antibiotic production at Chas. Pfizer & Company, Inc., appears in *The New Yorker,* July 28, 1951, page 27, under the title, "Something Extraordinary." Dr. John E. McKeen, F.A.I.C., was interviewed by the reporter before the laboratory trip.

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**New Sales Office:** Opened by Shell Chemical Corporation in Atlanta, Georgia. M. W. Ellison, of the N.Y. sales staff, has been appointed manager.

**To Be Honored:** Professors William L. Prager, F.A.I.C., and Reston Stevenson, of the chemistry faculty of the City College, New York, N.Y., on December 26th, at 6:30 p.m. in the Hotel New Yorker, by the City College Chemistry Alumni Association. Tickets may be obtained from Dr. Frank Brescia, A.A.I.C., Department of Chemistry, City College of New York, Convent Ave., and 140th St., New York 31, N.Y. The subscription is $6.00. Drs. Prager and Stevenson will retire from the chemistry faculty of the college at the end of the current academic year.

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**Conference:** The second Thomas Alva Edison Foundation for Science Teachers, November 12th and 13th, at Mr. Edison's former home in Llewellyn Park, West Orange, N.J. Subject: "The Dependence of Western Civilization on American Industry and the Critical Shortage of Engineering and Scientific Manpower." Vice Admiral Harold G. Bowen, executive director of the Foundation, Main Street at Lakeside Ave., West Orange, N.J., stated that there is urgent need of interesting more high school students in becoming engineers and scientists.

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**New Sales Manager:** Appointed by Glyco Products Co., Inc., Brooklyn, N.Y., Jack H. Dollinger, F.A.I.C., formerly assistant sales manager.

# Opportunities

## Doris Eager, M.A.I.C.

### Positions Available

**Lubricating Grease Expert.** Medium-size chemical company desires top-notch man with vision and drive, to plan and carry through a research program designed to increase the sales of grease bases and additives, and expand company operations in the lubricant field. Must be abreast of all new developments. High salary and opportunity for the right man. Location near New York. Box 111, THE CHEMIST.

**Organic Chemist.** Bachelor or master's degree in chemistry, advanced work in organic chemistry. Experience in organic synthesis desired. Location Massachusetts. Box 113, THE CHEMIST.

**Organic Chemist.** Ph.D. in organic chemistry. 2-4 years experience in pharmaceutical field and in the use of radioisotopes in biochemical research. Background in nuclear physics desirable but not essential. Location Massachusetts. Box 115, THE CHEMIST.

**Organic Chemist.** B.S. with 6-7 years experience; Ph.D. with 2-4 years experience. Inorganic or physical chemist with experience in pharmaceutical research. Development of new products. Location Massachusetts. Box 117, THE CHEMIST.

### Chemists Available

**Chemist.** ACS, AIC, AAAS, seeks managerial position in production control. Experience (9 yrs.): batteries, glues & gelatines, library, com'l testing, textiles, electronics. Age 32, married. Location N.Y. N.J. Box 110, THE CHEMIST.

**Chemist,** B.S. in chemistry, single, age 33, 7 years experience in water chemistry—sanitary, and water conditioning, covering work in analytical, product development, and technical service and ½ year experience production supervisor. Box 114, THE CHEMIST.

**Defense Research:** Universities or individuals who wish more direct participation in defense research are given advice in a statement issued by the Science Advisory Committee of the Office of Defense Mobilization, Washington 25, D.C. Among the suggestions are: (1) the assignment of outstanding men to projects; (2) the granting of leaves to specially qualified leaders to take government agency positions; (3) the welcome by universities and colleges of opportunities for joint projects; (4) the volunteering of individuals to defense projects; (5) the specifying of definite periods of leave to avoid separating individuals too long from their normal activities; (6) emphasis on the importance of research and teaching: "The scientist in his laboratory and the research professor with his graduate students are performing a service which may make a critical difference to our country in the difficult years ahead."

Advice in particular situations may be obtained from the Department of Defense.

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**Awarded:** By the John Simon Guggenheim Memorial Foundation, fellowships totaling $568,000 to 154 Americans and Canadians, in economics & political science, chemistry, biochemistry, medicine, genetics, physics, and mathematics. Nine awards were made in chemistry, and eleven in biochemistry.

# For Your Library

## The Biochemistry of B Vitamins

*By R. J. Williams, R. E. Eakin, E. Beerstecher, Jr., and W Shive. Reinhold Publishing Corp.* 1950. 741 *pp.* $10.00

This book is divided into four sections. R. J. Williams is the author of Section A (Characterization, distribution, assay and biogenesis of B vitamins); R. J. Eakin of Section B (The catalytic functions of the B vitamins); E. Beerstecher, Jr., of Section C (The role of the B vitamins in animal and plant organisms); W. Shive of Section D (The comparative biological activities of the B vitamins and related compounds).

The authors have been exceedingly successful in presenting a desirable reference work concerning B vitamins. The volume is "in a readable form intelligible to those whose activities may be along a wholly different line."

—Dr. Henry Tauber, F.A.I.C.

## Patents for Technical Personnel

*By Dr. Worth Wade. Chemonomics, Inc.* 1951. 40 *pp.* 6" x 9". $3.00.

This handbook is designed and, it is deemed, will serve well to acquaint the chemist with many of the essentials underlying the preparation for and the preparation of applications, and the prosecution thereof before the patent office.

The purpose, as stated by the author, "is to provide supervisory and technical employees and students of chemistry and engineering with information on the functions of a Patent Department, how to recognize an invention, how to keep proper records, how to protect inventions, how to read a patent, and the benefits to be derived by the employee and a company from inventions and patents."

The handbook contains, as features, flow sheets showing the steps to be taken in converting an idea into a patent application, prosecuting the application to the stage of the issued patent, and conducting an interference involving two or more applications for the same invention, detailed instructions for preparing invention records, discussions of the corporation patent department, how to construct and how to construe patents, how to detect and avoid infringement, and the patent rights of employers and employees.

It is concise, readable, and well-worth the attention of science students, chemists, and engineers.

—Dr. Lloyd Van Doren, F.A.I.C.

## Analytical Chemistry of the Manhattan Project

*Editor-in-Chief, Clement J. Rodden.* 1950. *McGraw-Hill Book Inc.* 748 *pp.* 6" x 9". $6.75.

First in a series prepared as a record of the research work done under the Manhattan Project and the Atomic Energy Commission, this volume is a compilation of the methods used for the analysis of many kinds of materials used in the Project. Emphasis has been placed on those materials, such as uranium, plutonium, thorium, and their compounds. Past and present practices in the separation of these elements are described, but radio-chemical methods have been treated superficially here since the subject is treated in detail in another volume of the series. This is one of the many inevitable instances of overlapping in the scientific fields covered by the records of the Project.

—Dr. Frederick A. Hessel, F.A.I.C.

## Molecules and Crystals

*By A. E. Van Arkel, Translated by J. C. Servallow. Interscience Publishers.* 5¾" x 8¾". $3.75.

This book constitutes a series of lectures. The chemical bond and its relation to the structure of molecules and crystals, energy changes in chemical reactions, and various properties, are elaborated.

## Electron Microscopy

*By Ralph W. G. Wycoff. Interscience Publishers.* 248 *pp.* 6¼" x 9¼". $5.00.

The hundred-fold extension of the microscope by means of electron beams has opened up a great expansion of observation of macro-molecules, fine structures, viruses, suspensions, colloids, etc. This is a well-written book on the electron microscope with a wealth of detail and excellent photographs.

## Advances in Colloid Science

*Vol. III. Editors H. Mark and E. J. W. Verwey. Interscience Publishers.* 384 *pp.* 6¼" *x* 9⅜". $7.50

This volume contains treatises on Adsorption, by J. H. DeBoer; Surface Chemistry, by A. E. Alexander; Electrophoresis, by J. J. Overbeek; Lyogels, by A. E. Hauser; Ultracentrifuge, by P. Kinnell and B. G. Ranby; Fatigue in High Polymers, by J. H. Dillon, and Flotation, by Strathmore Cooke. New material is given as well as revaluations of the old.

—Dr. John A. Steffens, F.A.I.C.

## Chemical Books Abroad

**Rudolph Seiden, F.A.I.C.**

Walter de Gruyter & Co., Berlin: *Lehrbuch der organischen Chemie,* by A. F. Holleman and F. Richter, 28th ed., 526 pp. with 97 ill., DM 24. A new edition (with only minor changes) of the splendid textbook reviewed in the January 1951 issue of THE CHEMIST. • *Tonerde und Aluminium, I: Die Tonerde,* by W. Fulda and H. Ginsberg, 1951, 226 pp. with 50 ill., DM 26. An authoritative monograph of the raw materials, bauxite and alumina silicates, and of the industrial production methods of alumina which have proved practical during the last 30 years. • *Die chemische Affinitaet,* by Egon Wiberg, 1951, 254 pp. with 36 ill., DM 24. Unlike other books about thermodynamics, this readable introduction into its theories employs formulas and equations in a multitude of practical examples. Each of them is calculated through, because shortcuts, in the author's experience, are so often the cause for confusion in the students' mind. • *Pharmazeutisches Woerterbuch,* by Curt Hunnius, 1950, 504 pp. with 87 ill., DM 14.50. This dictionary of pharmaceutical terms is a great time-saver since it answers briefly, yet comprehensively, thousands of questions asked every day by pharmacists, physicians, and chemists.

Editio Cantor, Aulendorf i. Wuertt.: *Histamin und Antihistamine,* by Hans Haas, 1951, 212 pp. A critical summary of the many antihistaminic preparations and their medical indications found during the last 10 years. Hundreds of literature sources are listed in connection with the book's 63 tables, in addition to the 859 references at the end of the book.

Benno Schwabe & Co., Basel: *Rauschgifte und Genussmittel,* by Knud O. Moller (and 9 coworkers), 1951, 431 pp. with 43 ill. Sfr. 19.50. This is an exquisite translation of a Danish book written with a minimum of chemistry, so that it will be understandable not only to experts in various fields—such as physicians, lawyers, and pharmacists—but also to laymen who are interested in the uses and misuses of coffee, tea, nicotine, alcohol, hypnotics, benzedrine, opium, morphine, cocaine, and exotic narcotic poisons.

Hilger & Watts Ltd., London: *Leaf Analysis,* by H. Lundegardh, translated from the German by R. L. Mitchell, 1951, 176 pp. with 32 ill., 22s6d. A book of interest to plant physiologists and agricultural chemists. The author employs chemical (particularly many spectrographic) methods in leaf analysis to determine the manurial requirements of soil. To me this book is of special interest because of my investigations about a similar subject—leaf and whole plant analysis to determine the influence of various external factors upon the mineral (ash) and starch contents of plants — which were published in "Die landwirtschaftliche Versuchstationen (Vol. CIV, pp. 1-50) and as a book (Paul Parey, Berlin, 1925); many of our findings concur. • *Practical Spectroscopy,* by C. Candler, 1949, 190 pp., 21s. This is a well-illustrated elementary text on spectroscopy which describes many experiments (most of them carried out with the Hilger-Barfit wavelength spectrometer). • *Absorption Spectrophotometry,* by G. F. Lothian, 3rd ed., 196 pp. with 71 ill., 26s. Progress was so great during the last few years, that a completely rewritten edition of this well-known book became a necessity. It now deals with the theory of absorption spectra which are indicated by wave-lengths ranging from 2000 to 250,000A and with their measurement by photographic, visual, and photoelectric spectrophotometry.

Butterworths Scientific Publications, London (Interscience Publishers, New York 1): *Molecules and Crystals,* by A.

E. van Arkel, translated from the Dutch by J. C. Swallow, 1949, 234 pp. with 45 ill., $3.75. An original textbook about the correlation of structures and properties in inorganic chemistry, with emphasis on the hypothesis about the heteropolar (or ionic or electronic) bond. This hypothesis makes it possible to foretell what atoms must react together, and in what way, in order to produce compounds with given properties.

Dr. Alfred Huethig Verlag, Heidelberg: *Die physiologischen und pharmakologischen Wirkungen der aetherischen Oele, Riechstoffe und verwandten Producte*, by Arno Mueller, 2nd ed., 168 pp. The pharmacological and physiological actions of (alphabetically listed) ethereal oils, perfumes and related substances are summed up (together with literature references); methods of efficacy investigations, a list of indications for medical uses, and various formulas are also included in the volume.

## Diamonds

(Some noteworthy quotations collected from the Diamond Jubilee of the American Chemical Society in New York, N.Y.)

"It is a striking tribute to our democracy that so great a number of scientists can assemble here free from suspicion of one another, and free from fear of outside interference. This kind of personal freedom is our most precious national asset. It needs to be carefully guarded and zealously watched, for freedom is in more serious danger today than at any time in our national history."

—President Harry S. Truman

"History is filled with wars caused by the demands of expanding populations for food and the means of life. Comparable with these are the migrations and the wars for new land to replace exhausted and eroded lands. Only as such situations are corrected can civilization advance . . . Never before in the history of mankind was scientific vision and leadership more necessary for the future of mankind. The seventy-five years of the American Chemical Society attest to such leadership within your profession. I am confident it will continue."

—Vice President Alben W. Barkley

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"In an era of pessimism and tension you have produced abundant evidence that mankind, if it wills to do so, may look forward to the future with optimism and even enthusiasm. Your accomplishments prove there need be no limit to progress.

—Governor Alfred E. Driscoll,
*New Jersey*

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"The ACS Diamond Jubilee provides a most appropriate occasion for a public health physician to express the gratitude of the health professions to chemists.

—Dr. Leonard A. Scheele
*Surgeon-General, U.S. Public Health Service*

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"Very probably, the keys to the cancer problem will be found eventually in the keeping of the chemists."

—Dr. C. E. K. Mees
*Eastman Kodak Company*

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"It seems safe to predict that during the next quarter-century more scientists will continue to investigate the chemistry of life processes than any other general area of research."

—Dr. N. Howell Furman
*President, ACS*

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Conclusion, after commenting about those scientists who were refused admission visas to the United States, to attend the Diamond Jubilee: "We are rapidly approaching . . . the stage where it is inappropriate for international scientific conventions to be held in this country."

—Dr. Bernard D. Davis
*Cornell University*

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"The changes of the last seventy-five years have been more drastic and upsetting than those which had taken place in the preceding two-hundred and fifty years since Shakespeare's time, and chemistry has been one of the principal factors in causing or promoting those changes."

—Dr. Arthur B. Lamb
*Professor Emeritus, Harvard*

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Without the joint efforts of research chemists and industrial engineers, "we never could have achieved the standards of living that are such an outstanding characteristic of our nation, nor would we have anything like as strong a bulwark against foreign aggression as we now enjoy."

—U.S. Senator, J. Allen Frear, Jr.
*Delaware*

"As we turn toward the century mark of our society's organization and toward the nation's bicentennial, we are clearly in the critical years—the years of decision as to our essential freedom and our way of life. Whether future historians will call this the chemical century, the scientific century, or the catastrophic century will depend in no small measure on the beliefs, the powers and the activities of the groups that are here represented. Let us resolve to use our skills and talents, together with whatever persuasive powers we may possess, toward every constructive action for the future benefit of mankind."

—Dr. N. Howell Furman

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The Postmaster General's approval of the stamp commemorating the 75th anniversary of the Society was given in recognition of the "important part chemistry has played in the development of our country and the outstanding contribution your society has made to the betterment of mankind. There is no peace-time product that the public uses which is not better today because of chemistry's contributions."

—Osborne A. Pearson
*Assistant Postmaster General*

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"The restriction imposed upon the export of technical publications . . . amounts to only a futile gesture as once the information has been published it cannot be withheld from the rest of the world . . . The power to withhold scientific information should never be in the hands of those who do not understand it."

—Dr. E. J. Crane
*Editor, Chemical Abstracts*

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"Today newspapers in the United States, as nowhere else in the world, have their doors wide open to good informative science stories. Just make them interesting."

—Howard A. Blakeslee
*Associate Press*

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## Information

"Sequet". Bottle-washing additive. Information. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.

"New Fisher Isotemp Bath." Information. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

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"Progress in Research Laboratories." Article. Cenco News Chats No. 72, Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.

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"Dynel Data" News sheets. Textile Fibers Dept., Carbide & Carbon Chemicals Co., 30 E. 42nd St., New York 17, New York.

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"Inexpensive Freeze-Drying Unit." Details. F. J. Stokes Machine Co., 5500 Tabor Rd., Philadelphia 20, Pa.

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"Flexible Heating Tape." Information. Scientific Glass Apparatus Co., Inc., Bloomfield, N.J.

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"Proceedings of the 1951 Annual Meeting of the Research and Development Associates." Research and Development Associates, Food and Container Institute, 1849 W. Pershing Rd., Chicago 9, Ill.

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"U.S. Government Films for School & Industry." Catalog. United World Films, Inc., 1445 Park Ave., New York 29, N.Y.

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"Three Keys to Strength: Production, Stability, Free-World Unity." 3rd quarterly report to the President by the director of Defense Mobilization. 30 cents. Supt. of Doc., U.S. Gov. Printing Off., Washington 25, D.C.

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"Syton C-30, colloidal solution of hydrated silica in water." Bulletin. Merrimac Div., Monsanto Chemical Co., Everett, Mass.

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"The Southern Market for Scientific Apparatus & Supplies." Survey. Southern Association of Science & Industry, 5009 Peachtree Rd., Atlanta, Ga.

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"Outline of the History of Chemistry." Charts. Mallinckrodt Chemical Works, St. Louis 7, Missouri.

"New Package Plan for Trade Shows & Conventions." Exposition Dept., Grand Central Palace, 46th St. & Lexington Ave., New York 17, N.Y.

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"Agilene (Polyethylene) Fabricated Containers" and "Physical & Chemical Properties of Agilene." Data Sheets. American Agile Corp., Plastics Div., 5806 Hough Ave., Cleveland 3, Ohio.

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*The Laboratory*, publication of Fisher Scientific Company, devotes its issue No. 5, Vol. 20, to the 100-year, illustrated, history of Eimer and Amend, now a division of Fisher Scientific Company.

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"Special Slide Rule for Radioactivity Computations." Information. J. L. Herson, 3000 Connecticut Ave., N.W., Washington 8, D.C.

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"Pooling Production for Defense." Booklet. Department of Commerce field offices, or Distribution Section, Printing Service Division, Department of Commerce, Washington 25, D.C.

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"Fifteen-minute Dramatized Record." Subject: Aid to Europe. Title: "We Can Do It." $1.00 from Committee for Economic Development, 444 Madison Ave., New York 22, N.Y.

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"Vacuum Impregnation." 32-pp. Brochure. F. J. Stokes Machine Co., 5500 Tabor Road, Philadelphia 30, Pa.

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"Product Control Through Infrared Analysis." 8-pp. Brochure. The Perkin Elmer Corp., Norwalk, Conn.

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"Royalton Balance Illuminators." Information. Meyer Scientific Supply Co., Inc., 215 North 8th St., Brooklyn 11, N.Y.

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"Diethyl Succinate." Technical Data Sheet. Monsanto Chemical Co., St. Louis 4, Missouri.

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"Specifications for Use of Pentachlorophenol Wood Preservative." Bulletin. Monsanto Chemical Co., St. Louis 4, Mo.

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"Belmont Hilsch Vortex Tubes." Leaflet. Form V-2-551. Thermo Instruments Co., 1189 El Camino Real, Belmont, Calif.

"A Basic Marketing Chart of the United States." Single chart $2.50. Discount for quantities. Research Company of America, 341 Madison Ave., New York 17, N.Y.

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"Consulting Services." Directory of Consultants. Free, if source of reference, name of person, company's name, address, and postal zone number, are given to the Association of Consulting Chemists and Chemical Engineers, Inc., 50 E. 41st St., New York 17, N.Y.

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"Industrial Division." Information about services offered by The Psychological Corporation, 522 Fifth Ave., New York 18, N.Y.

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"Pyroset Fire Retardant Finishes." American Cyanamid Co., Textile Resin Dept., Bound Brook, N.J.

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"Records Research Reports on the Controlled Materials Plan." Manual. Booklet X-1203. Management Controls Div., Remington Rand Inc., 315 Fourth Ave., New York 10, N.Y.

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"Hannon Electric Screen Heater." Bulletin. F. R. Hannon & Sons, 1609 Waynesburg Rd., S. E., Canton, Ohio.

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# Condensates

## Ed. F. Degering, F.A.I.C.

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I have one final plea to scientists going into industrial research. In industry we have gone a long way in making our buildings and facilities versatile. We can move partitions and laboratory services with great freedom and dispatch, and we have great ability in building instruments and equipment and pilot plants for almost any type of investigation; but we have great need for corresponding flexibility in the training of our scientists. There will, of course, always be a need for physicists who are highly specialized in a narrow field of investigation, but in addition to these we have a great need for people who by disposition and broad training are highly versatile in their scientific abilities. These individuals can, with suitable apprenticeship, become progressively expert in many fields, as these fields become important in the ever-changing picture of scientific research. In short, we need more general practitioners of physics. To fill this specification takes one part of training—fundamental broad training—and one part of courage. For it does take a lot of courage to leave a field in which one has become an expert, for a new field in which one will be a neophyte. But the new field is a new challenge and will provide great stimulus to further accomplishment.

—C. G. Suits

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If at first you don't succeed, try, try again, then quit; there is no use being a damn fool about it.

—W. C. Fields

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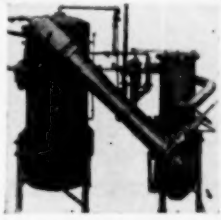

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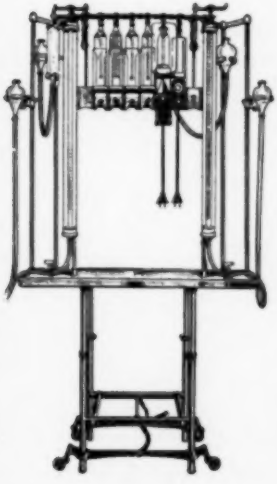

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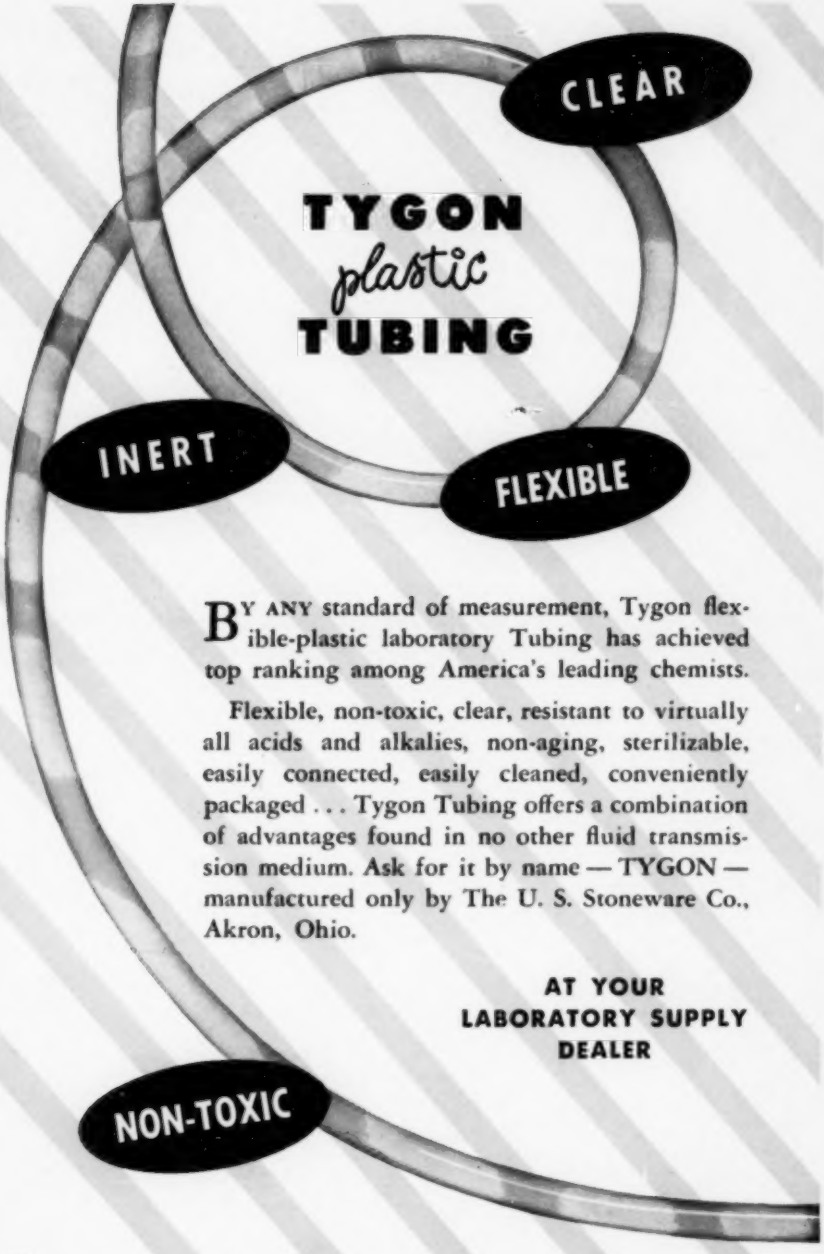


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